City of Detroit

CITY COUNCIL

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TO: COUNCILMEMBERS

FROM: Irvin Corley, Jr., Director
Anne Marie Langan, Deputy Director

DATE: March 1, 2007

RE: Fiscal Impact to the City due to Non-Resident Employees

Councilmember Watson asked our office to determine the fiscal impact to the city due to employees moving out of the city since the residency law was changed in 2000.

Attached is a copy of the Anderson Economic Group's study entitled "Economic and Financial Impact Assessment of Changed in Residency Requirements in the City of Detroit, Michigan". This study was commissioned by Mayor Archer in 1999 during negotiations and lobbying with the legislature prior to the passage of P.A. 212 of 1999 that restricted city residency rules.

The Anderson study found that a change in the residency law would result in a loss of tax revenue to the City of Detroit. The study focused on income tax, property tax and utility user tax. They felt that the annual loss to the city would be $21 million annually.

Using the same three major revenues along with the actual number of non-resident employees as of June 2005, our office determined the annual loss to the city to be $7.059 million, but after applying the same multiplier effect as the study did of 1.25, the total loss calculation is $8.82 million per year.

We have asked the Administration for additional and updated information for further analysis and they are willing to assist us, but the information is not easily generated. When we receive the information and if it changes our numbers, we will inform Council.

cc: Council Divisions
Kandia Milton, Mayor's Office

Update on Fiscal Impact to the City of Detroit Due to Non-Resident Employees

As of 6/30/2005 Citywide percentage of nonresident employees 26.46%

Income Tax Impact Analysis:

Municipal income tax rate budgeted in 2007: 2.5% for residents and 1.25% for non-residents

Estimate of municipal income tax revenue if all employees were residents

FY 2007 All Citywide salary and wage budget - $676 million @2.5% =	$ 17.30 M		
FY 2007 Resident Employee salary budget - 9,277 employees			
Calculation: $497.5M x 2.5% =	$ 12.40 M		
FY 2007 Non-Resident Employee salary budget - 3,337 employees			
Calculation: $178.5M x 1.25% =	$ 2.20 M		
Est. of inc. tax rev. with mix of residents and non-resident employees	$ 14.60 M		
	Lost Revenue	$ 2.70	M

Property Tax Impact Analysis:

Assume Average Taxable Values for homesteads	$ 35,000		
Assume 75% of all active employees own home			
75% of 12,614 actives= 9,460 less 26.5% FTEs who become non-residents=2,507			
Calculation: $35,000 avg TV x 35.9706 mills x 2,507 =		$ 3.156	M

Solid Waste Fee:

2,507 employees who move household out of city			
2,507 x $300 =		$ 0.752	M

Utility User's Tax Impact Analysis:

Assume $300/month for either gas or electric	$ 3,600		
Calculation: $3,600 x 5% x 2,507 households		$ 0.451	M

Annual Lost Revenue due to city employees moved out of city		**$ 7.059**	**M**
Multiplier effect of 1.25		**$ 8.82**	**M**

Number of city employees who have moved out of city	**3,337**
Multiplier effect of 1.25	**4,171**

Total Population loss in Detroit as estimated by SEMCOG 2000-2006	**82,500**
Total Occupied housing unit loss in Detroit as estimated by SEMCOG 2000-2006	**30,038**
Total Housing units lost in Detroit as estimated by SEMCOG 2000-2006	**13,222**

RESIDENCY OF PUBLIC EMPLOYEES
Act 212 of 1999

AN ACT to restrict certain governmental entities from requiring individuals to reside within certain geographic areas or specified distances or travel times from their place of employment as a condition of employment or promotion.

History: 1999, Act 212, Eff. Mar. 10, 2000..

The People of the State of Michigan enact:

15.601 Definitions.

Sec. 1. As used in this act:

(a) "Public employer" means a county, township, village, city, authority, school district, or other political subdivision of this state and includes any entity jointly created by 2 or more public employers.

(b) "School district" means a school district, local act school district, or intermediate school district as those terms are defined in the revised school code, 1976 PA 451, MCL 380.1 to 380.1852, or a public school academy established under the revised school code, 1976 PA 451, MCL 380.1 to 380.1852.

History: 1999, Act 212, Eff. Mar. 10, 2000.

15.602 Residency requirements of public employees.

Sec. 2. (1) Except as provided in subsection (2), a public employer shall not require, by collective bargaining agreement or otherwise, that a person reside within a specified geographic area or within a specified distance or travel time from his or her place of employment as a condition of employment or promotion by the public employer.

(2) Subsection (1) does not prohibit a public employer from requiring, by collective bargaining agreement or otherwise, that a person reside within a specified distance from the nearest boundary of the public employer. However, the specified distance shall be 20 miles or another specified distance greater than 20 miles.

(3) A requirement described in subsection (2) does not apply to a person if the person is married and both of the following conditions are met:

(a) The person's spouse is employed by another public employer.

(b) The person's spouse is subject to a condition of employment or promotion that, if not for this section, would require him or her to reside a distance of less than 20 miles from the nearest boundary of the public employer.

(4) Subsection (1) does not apply if the person is a volunteer or paid on-call firefighter, an elected official, or an unpaid appointed official.

History: 1999, Act 212, Eff. Mar. 10, 2000.

15.603 Applicability to certain employment contracts.

Sec. 3. This act applies only to employment contracts entered into, renewed, or renegotiated after the effective date of this act, in accordance with the prohibition against impairment of contracts provided by section 10 of article I of the state constitution of 1963.

History: 1999, Act 212, Eff. Mar. 10, 2000.

ECONOMIC AND FINANCIAL IMPACT ASSESSMENT

of a

Change in Residency Requirements
in the

City of Detroit, Michigan

Submitted by:

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Anderson Economic Group,
a division of BBK, Ltd.

615 W. Ionia, Lansing Michigan 48933
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Revised September 19, 2000

TABLE OF CONTENTS

INDEX OF TABLES AND FIGURES

Executive Summary

Goals of the Analysis

Patrick L. Anderson, managing director of Anderson Economic Group, was commissioned in June of 1999 to evaluate the economic and financial impact of a legislative proposal to end the ability of the City of Detroit to require that City employees live within the City.[1] The findings of that research were summarized in a report given in two labor arbitration proceedings in the fall of 1999. At the request of the City, Mr. Anderson also presented the results of the research to a committee of the Michigan House of Representatives later in the year. A portion of the report was also made available to the general public on the Internet site of Anderson Economic Group.[2]

The legislature ultimately adopted, and the Governor signed, a public act restricting the rights of cities to enforce residency requirements. This report summarizes the results of the original research on the probable effects of ending the residency requirement, and includes additional relevant information that has become available since the fall of 1999.

Project Team

Patrick L. Anderson, Managing Director of Anderson Economic Group, directed the study. Mr. Anderson has over 15 years experience in evaluating the economy and public finances of the state of Michigan and its cities. His background before founding AEG included serving as Economist for Manufacturers National Bank of Detroit (now Comerica), AVP for Alexander Hamilton Life Insurance Company, Deputy Budget Director for the State of Michigan, and Chief of Staff of the Department of State. He is the author of over 75 published monographs, studies, and articles on economic issues, including a number of analyses of the Detroit-area economy.

Ian K. Clemens, consultant with AEG, assisted on the data collection, modeling, and analysis. Mr. Clemens received a degree in Mathematics from the Massachusetts Institute of Technology, and has been a consultant with AEG since 1998, where his projects have included economic impact assessments, city business climate and budget comparisons, and demographic analysis.

[1] Michigan Act 312 arbitrations between the City of Detroit and the Lieutenants and Sergeants Association, and the Police Officers Association.

[2] The Anderson Economic Group site is http://www.aeg1.com.

Residency Requirements

Detroit, like many other cities in Michigan and across the country, imposes a residency requirement on its employees. However, a bill recently signed into law prohibits local governments from imposing such requirements or including them in collective bargaining agreements.[3] According to a legislative analysis, the bill would negatively affect the City's finances, by "reducing the income tax revenue collected by … cities that levy a city income tax."[4]

This report discusses the economics of the Detroit area, the location preferences of Detroit residents, as evidenced by survey data and actual behavior, and the fiscal and economic implications of Detroit residents exercising their location preferences under the new law.

Migration Potential of the Detroit Metropolitan Area

The greater metropolitan area surrounding the City of Detroit is the 8th largest in the country, accounting for over 5.2 million people, of which over 4.3 million are in the immediate Detroit Metropolitan area.[5] A network of freeways allows direct access to most parts of the Metropolitan area, as well as surface streets connecting with all areas. Thus, employees of the City of Detroit are able to easily relocate in other urban and suburban areas within commuting distance of their places of work.

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[3] Public Act 212 of 1999, which was signed into law by Governor Engler on December 22, 1999, and effective on March 10, 2000. The bill provides in pertinent part:

> Sec. 2. A public employer shall not require, by collective bargaining agreement or otherwise, that a person reside within a specified geographic area or within a specified distance or travel time from his or her place of employment as a condition of employment or promotion by the public employer. This act does not prohibit a public employer from requiring, by collective bargaining agreement or otherwise, that a person reside within a specified distance from the nearest boundary of a public employer. However, the specified distance shall be 20 miles or another specified distance greater than 20 miles.
>
> Sec. 3. This act applies only to employment contracts entered into, renewed, or renegotiated after the effective date of this act, in accordance with the prohibition against impairment of contracts provided by section 10 of article I of the state constitution of 1963.

A constitutional amendment has been placed on the November, 2000 ballot that, if passed, may affect this Act.

[4] "Bill Analysis," 4-20-99; Senate Fiscal Agency, Lansing Michigan. A second analysis, recapping arguments pro and con, again repeated the notion that, especially in "unattractive" cities, that some employees would likely move out a city that no longer imposed a residency requirement.

[5] Bureau of Census, Current Population Estimates, MA-96-8. The Detroit-Flint-Ann Arbor area is considered a CMSA by the Census; the Detroit PMSA accounted for 4.3 million people in 1996; the Ann Arbor and Flint PMSAs had 530,000 and 436,000 people, respectively

Reasons for Employee Relocation

The City has endured a serious loss in population and economic base over the past three decades. At the last decennial census, the City barely maintained a population over 1 million. Most private and governmental estimates of the current population indicate a continuing decline, although the City believes the population remains above 1 million.[6]

There is evidence of a motivation on the part of City employees to relocate outside the City. Past surveys of City employees have indicated a desire to migrate on the part of a significant number of employees, although this survey data is dated and may no longer reflect current conditions.[7] While survey data have well-known limitations, the empirical evidence of migration on the part of Detroit's citizens is overwhelming.[8] As other residents of the City, not compelled by ordinance to reside within the City boundaries, have chosen to relocate, there is strong reason to believe similarly-situated municipal workers would do so as well.

Census data indicate that, among *employed* workers of various occupations residing in the City of Detroit in 1985, between 14% and 29% had relocated outside the City by 1990. In the professional, technical, managerial, clerical, and sales occupations, between 21% and 29% had migrated in just 5 years. These data are presented in *Table 1: Migration Status of 1985 Detroit Population.*

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[6] Part of the dispute lies in the under-numerated portions of society, which are disproportionately concentrated in cities like Detroit. The results of this analysis apply whether the City is above or below the 1 million mark, as it focuses on the *change* in tax revenue from current, unambiguous levels.

[7] The survey data is reported in the Thompson analysis, described in the section entitled "Comparison with Past Analyses," starting on page 24.

Some conditions have changed since these surveys were conducted. The current City administration enjoys much better relations with the suburbs than in the past. The finances of the City are in better shape than during much of the 1980's, as reflected in bond ratings upgrades in 1992 and 1996. However, the City continues to have shakier finances than many of its peers, and the current recovery in its fortunes is somewhat fragile. See, e.g., *Moody's Municipal Recap,* October 17, 1996, regarding an upgrade on Detroit's GO bonds from "ba1" to "baa."

[8] Actual behavior in the recent past is an excellent predictor of future behavior.

Table 1: Migration Status of 1985 Detroit Population

Selected Characteristics of Detroit Population in 1985, by Migration Status

People Living in Detroit in 1985, and Living Somewhere in US in 1990

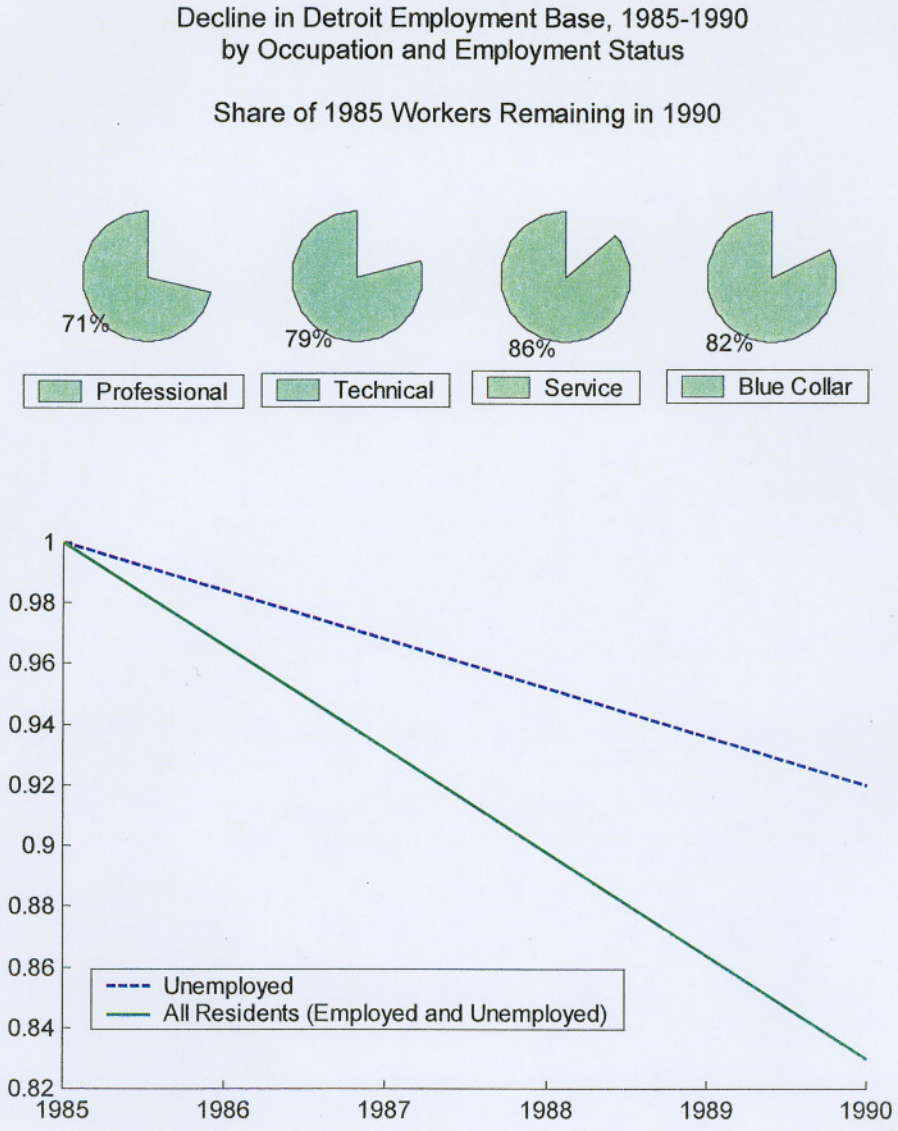
	—Place of Residence in 1990—		
	Detroit	Other Tri-County	Elsewhere in US
Overall Universe	83%	9%	8%
by Occupation:			
Professional/Managerial	71%	16%	13%
Technical/Clerical/Sales	79%	11%	10%
Service	86%	6%	8%
Blue-Collar	82%	11%	7%
Unemployed or working without pay	92%	3%	5%
by Number of Earners:			
One Wage Earner	81%	10%	9%
Two or More Earners	72%	17%	13%
No Wage earner	89%	6%	5%

Source: US Census Bureau, Public Use Microdata Sample, 1990; Patricia Becker, APB Associates

The degree to which the employment base of the City declined during this period, compared with the total base of residents, is graphically illustrated in *Figure 1: Decline in Detroit Employment Base, 1985-1990.* As shown in the figure, the professional, technical, service, and blue-collar employees in the City in 1985 migrated outside the City within five years. By contrast, fully 92% of the *unemployed* base of residents remained in the City.

Thus, as shown in the bottom panel of the figure, the decline in the remaining share of employed workers was *over double* that of the population as a whole.

Figure 1: Decline in Detroit Employment Base, 1985-1990



Source: Census PUMS; APB Associates

[Insert Figure 1 here]

Analysis of Current Residences

To better understand the factors that are used by City employees in their location decisions, we undertook a detailed analysis of the current locations of Detroit firefighters, using our geographic information systems facility.

Methodology

We received from the City a subset of their database of City of Detroit employees, which listed the home addresses of firefighter employees. We were able to precisely geocode 1,177 of the 1,185 listed locations of Detroit firefighters.[9] A number of locations were listed by more than one firefighter as their principal address, and a handful could not be referenced against our current street address database.[10]

We then mapped these geocoded locations and the boundaries of the City of Detroit, showing the relationship between the residences and the borders. We also performed some simple statistical calculations.

Current Residence Preferences

The map below illustrates the spatial distribution of residences of City of Detroit Firefighters. It is clear that firefighter residences are not randomly distributed. Instead, they tend to congregate in certain neighborhoods, often very close to the Detroit border.

To calculate with precision the degree of this congregation, we conducted a spatial analysis of the listed residences, using our geographic information systems facility. By precisely locating each residence, and the City's border, we identified those residences that were within a buffer region of just 1/2 mile in width, along the City's borders. Surprisingly, *about 46%* of the city's firefighters live within one-half mile of the city's border.[11] When you expand the buffer to 1 mile from the border, a full 63% of the firefighters live in the buffer area.

The City itself comprises about 142.7 square miles of space, and this buffer region occupies only 57.5 square mile of that space (including the region along the river, in which few firefighters live). Thus, the decision of most firefighters to live in a narrow strip next to surrounding communities conclusively that the location decisions are affected by a preference to spend a good amount of time outside the City.

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[9] To "geocode" a location is to take street address or other information, and use it to precisely locate it geographically, with spatial components such as longitude and latitude. Once the locations have been geocoded, they can then be mapped, and analyzed using spatial queries, such as the one below concerning border areas.

Specialized software and data are required for this; AEG maintains an extensive facility of this type. The general geographical information systems (GIS) facility we used for this project is Mapinfo Professional, with additional software provided by Anysite, including their geocoding engine, and data provided by a variety of vendors, most of which is based on US Census data and Census TIGER files.

[10] These were excluded from the analysis; a source for these errors could be a new street name, or an error or omission in the listed street address or zip code.

[11] While this analysis includes the buffer strip along the city's waterfront, very few firefighter residences are included in this area. This observation supports the finding that the residential locations for many firefighters reflects a desire to live in or near other communities in the (U.S) Detroit metropolitan area.

Border Areas and Location Decisions

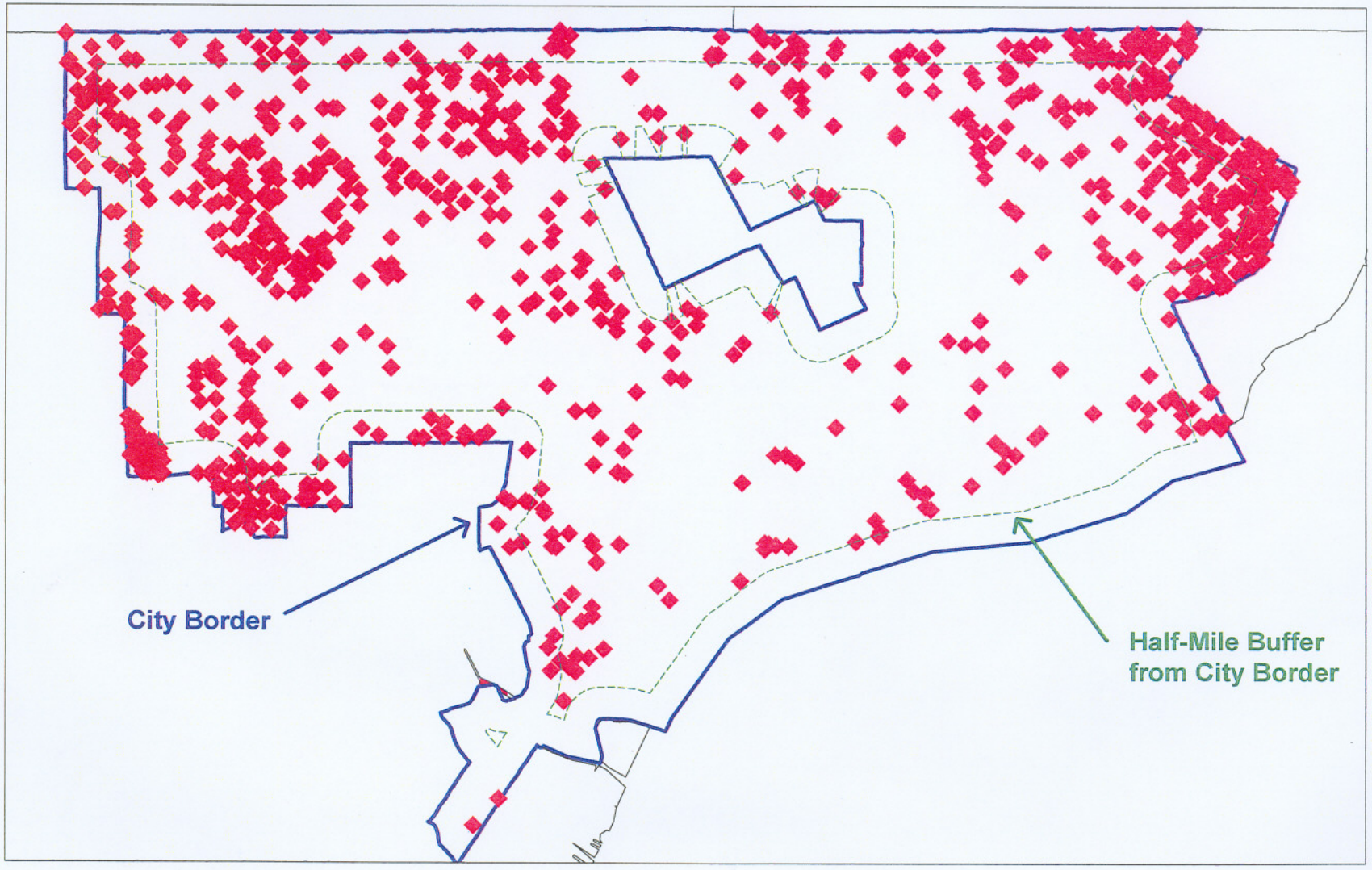
Current location decisions within the City provide an insight into the probable location decisions of City workers, if they were not subject to a residency requirement. The visual shows clearly that a large number of the City's firefighters already choose to live close to the City's border, signifying their preference to spend part of their time outside the City. Without the legal requirement to remain in the City, it stands to reason that many will opt to move into the communities in which they now spend considerable time.

This information corroborates the evidence presented elsewhere in this report that the City will suffer some fiscal and economic damage from the elimination of the residency requirement.[12]

[12] The spatial analysis of firefighters is presented as evidence of location preference. For the fiscal and economic analysis, we assumed that City employees spent about the same time and money as other city residents that are employed. We do not have the data necessary to test this proposition that firefighter location preferences are similar to those of other city employees. We do assume that the location preferences of city employees are similar to those of other employed city residents, although this is probably a conservative assumption for this analysis.

Current Residences of Detroit Firefighters

and Relationship to City of Detroit Borders



Source: Anderson Economic Group spatial analysis of City of Detroit employment data.
Anderson Economic Group, Lansing, Michigan; http://www.aeg1.com

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July 2000

Major Assumptions

A change in the residency law would result in an acceleration in the trend of population loss in the City of Detroit.[13] We anticipate that, with the law prohibiting the City from enforcing a residency requirement on its approximately 18,000 municipal workers, about 25% of those workers would relocate outside the City, over a 5-year period. Most of that adjustment would occur in the first two years.

This assumption is based on the extremely strong evidence presented above and in the remainder of the report, which indicate that:

- Between 29% and 14% of employed workers in various occupations in 1985 migrated outside the City by 1990;
- Fully 19% of the single-wage-earning households in 1985 migrated outside the City by 1990, and 28% of the two-earner-households;
- Both US Census Bureau and private estimates of population change since the 1990 Census project a continued decline in the City's population;
- Residents of the City of Detroit have migrated outside their City in the recent time period in far greater numbers than those in the majority of other cities in the region;
- While improvements in the general economy and the effectiveness of the City government have reduced some incentives to relocate outside the City, the poor state of the City's public school system and relatively high taxes, along with other factors such as density preference and desire to locate near growth areas of the region, continue to provide incentives for employed workers to relocate; and
- A disproportionate share of the members of the police and firefighter unions have already chosen to reside in neighborhoods at the border of the City, thus indicating by their current location a desire to locate outside the City.

We assume that, for every worker that leaves, his or her household will leave as well. For every four families of municipal workers that leave, one additional household will also leave.

These are very conservative assumptions, particularly the key assumptions about migration and the "multiplier" effect.[14] The findings of this analysis probably understate the total impact on retail and residential activity, earnings, employment, and tax revenue in the City.

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[13] See the section entitled *A Note on the 2000 Census* for a discussion of the Detroit population.

[14] In particular, most economic impact studies in this area use a "multiplier" in similar cases of 2.0 or more, rather than the 1.25 in this study. Some multiplier is needed because the loss of one family's tax revenue, retail purchases, and income will necessarily ripple through the rest of the City's economy, resulting in additional reductions.

The use of conservative assumptions is discussed in the text in the subsection entitled *Conservative Assumptions*, and an extensive list of base data, assumptions, and parameters are in the appendix entitled Assumptions.

Findings

A change in the residency law results in a loss of major tax revenue to the City of Detroit. This loss occurs because the decline in City workers residing in the City, especially Police and Fire employees, encourages others to leave the City as well. This loss in resident population carries with it declining retail activity, as well as a reduction in both property values and the attractiveness of many City neighborhoods.

We modeled separately the effect of these demographic and economic changes on the major tax revenue sources for the City. These include:

- Income taxes for residents, non-residents, and businesses; using the reductions in tax rates for personal income taxes required under the recently passed Public Act;
- Utility user taxes for resident worker households, and other households and businesses; and
- Property taxes, including both real (buildings and property) and personal.

For each major tax revenue source, an elimination of the residency requirement would result in a reduction in revenue.[15] The total annual direct cost, in major source tax revenue, would be approximately $21 million. This includes just major tax sources for the City—not revenue sharing, federal or state funds, or other sources that may also be negatively affected by the change—and assumes that the City's economy has received most, but not all, of the effects of a change in the residency requirement.[16]

The following table summarizes the impact, in fiscal year 2002-2003, of a change in the residency requirement:

Table 2: Effect of Residency Law Change in Fiscal Year 2002-2003

Change in Major Source Tax Revenue	Change in City Workers Maintaining City Residency	Change in Number of Resident Workers	Change in Population
-$21.7	-4,396	-5,495	-15,332

Source: AEG projections; base data from City of Detroit, Census Bureau, and other sources. Table shows changes from baseline projection.

[15] The overall municipal income tax revenue declines, though the revenue from non-residents actually increases for a while, due to the number of City workers who migrate outside the City for their residence (reducing resident income taxes), but retain their City jobs (thus increasing non-resident income tax revenue.)

[16] Some economic changes would occur even before a change went into effect; others would take effect as employees changed their plans, and still others would wait until they changed their residences. As noted below, it is difficult to precisely state in which years the full effect takes place. Accounting differences—such as fiscal year/calendar year offsets—also can affect the timing.

Other Factors Not Included in Fiscal Impact

The City would also realize other losses, which we did not model. These include:

- Reductions in State Revenue Sharing, especially as the "formula" moves towards a per-capita basis;
- Additional reductions in revenue for service income for enterprise funds, which would likely outstrip reductions in service costs;
- Continued subsidies to enterprise funds, which would have to be carried on a smaller revenue base;
- Any changes in Federal Aid due to lower population;
- Any reduction in the general economic growth rate, including income growth, in the City; and
- Other important factors that are difficult to quantify, such as the loss of the comfort of knowing that Police and Fire workers are living nearby; the attendant increases in crime; and the disruption in the general improving trend of Detroit.

The exclusion of these other factors makes the results we project quite conservative. Were we to exhaustively model all identifiable factors, the revenue loss we project would certainly be larger.

Comparing Results to Current Budget and Past Analysis

The results of this analysis were compared to a previous analysis of the issue, done by economist Michael Thompson in 1985.[17] This analysis, adjusted for the higher price levels, lower tax rates, and larger municipal share of the Detroit economy, produced an estimate of annual direct tax revenue losses to the City of Detroit equivalent to $24 million, once the effects of the migration had occurred. The similar results support the findings of this analysis. A comparison with the previous study is in an appendix entitled *Comparison with Previous Analysis*.

The projections were also compared with the current (fiscal year 1998-1999) budget, for major tax revenues. We project changes in revenue for major taxes that support general fund activities, with 1999 estimates that match very closely the budgeted figures for the City in the current fiscal year. A reconciliation of the projections with the current budget is in an appendix entitled *Reconciliation of Forecast with Budget*.

Conclusion

While any economic impact study relies on projections and partial information, this study relies on a conservative methodology and avoids exaggerating benefits or excluding costs. Even using conservative assumptions, the rescission of the authority of the City to enforce a residency requirement for municipal workers would result in significant reduction in tax revenue. As the City is struggling to maintain thinly balanced budgets, such a decline would result in significant damage to the City's economy and image.

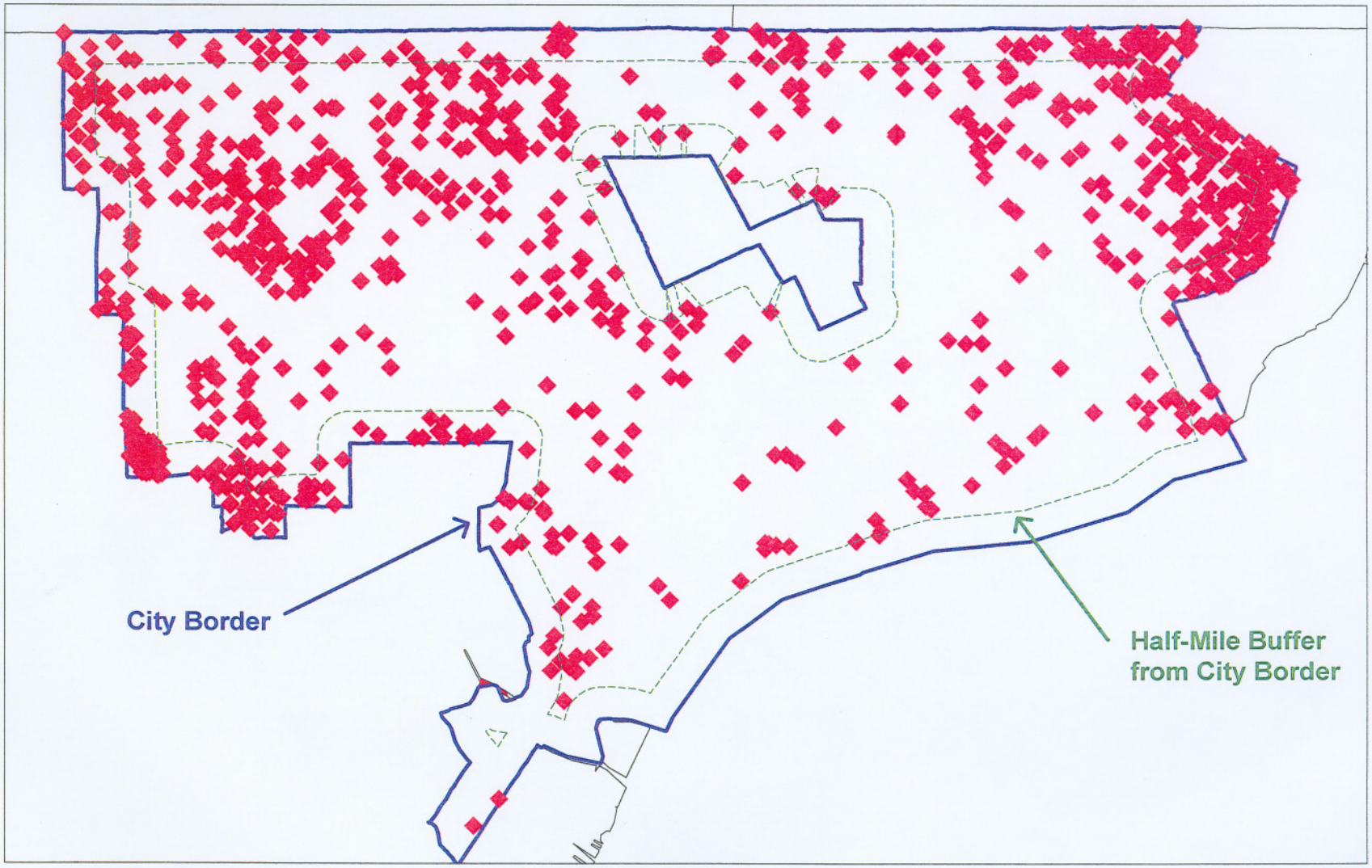
[17] Michael S. Thompson, "The Economic Impact of the Relaxation of the Residency Requirement of the City of Detroit," paper, no date but believed to be 1985.

Exhibits

The following exhibits illustrate the findings:

1. The exhibit *Population Changes in Southeastern Michigan* illustrates the profoundly different population trends in the City of Detroit and the areas surrounding it in recent years. The City has declined in population relative to its less densely-populated suburbs. This migration, which has taken place for a variety of reasons, is a good indication of the location preferences of many municipal workers. A change in the residency requirement for municipal workers—which have been prevented by ordinance from moving outside the City boundaries—would inevitably result in some changes in their locations.
2. The exhibit *Projected Revenue Changes to the City of Detroit* shows the projected change in tax revenue for municipal income taxes, property taxes, and utility user taxes:
   - Resident and corporate income tax revenues would be significantly lower under the residency law change scenario. Non-resident income tax revenue would be higher, as many workers who change their residence would retain their employment within the City. This increase in non-resident income tax revenue does not offset the decline in resident income tax revenue, though, as the non-resident rate is half that of the resident rate.
   - Real estate taxes, which are a larger share of the City's revenue base, also produce a larger revenue loss compared with the base scenario.
   - Two smaller components of the City's revenues are also affected. Utility tax revenue grows less rapidly under the revenue law change scenario. In addition, Corporate Income tax revenue declines faster under the law-change scenario. This is partially due to a decline in the tax rate, which we have assumed will occur in both scenarios.
   - The total impact on the City's budget, after the effects of the migration have largely occurred, will be over $21 million per year in direct revenue loss.
3. The exhibit entitled *Visual Outline of Economic Model* displays, in a graphical form, the structure of the model used to forecast the tax revenue changes to the City of Detroit. Note that changes in demographics, due to the change in law, drive changes in location, reduce the tax base, and result in lower tax revenues.

Current Residences of Detroit Firefighters and Relationship to City of Detroit Borders



Source: Anderson Economic Group spatial analysis of City of Detroit employment data.
Anderson Economic Group, Lansing, Michigan; http://www.aeg1.com

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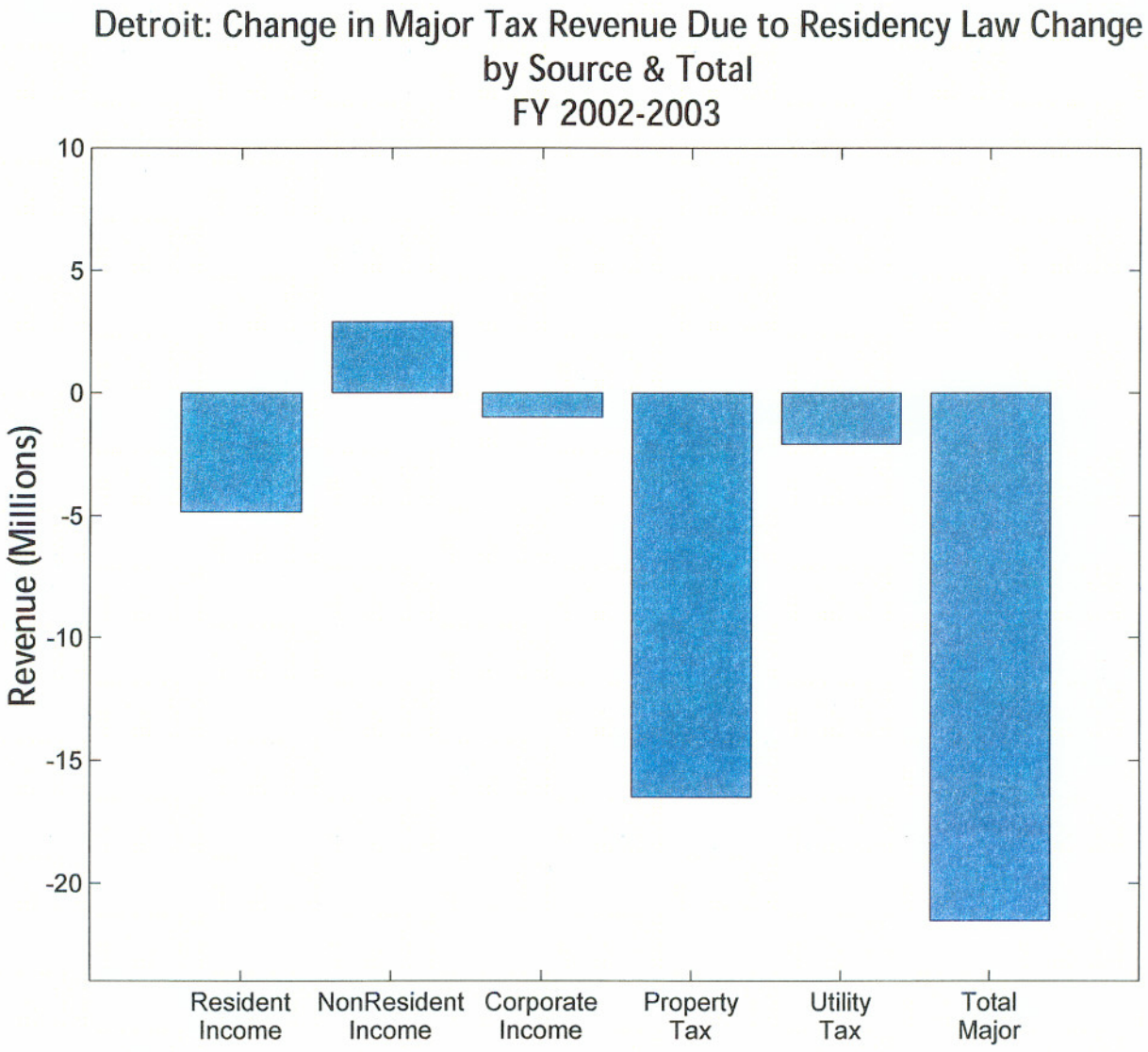
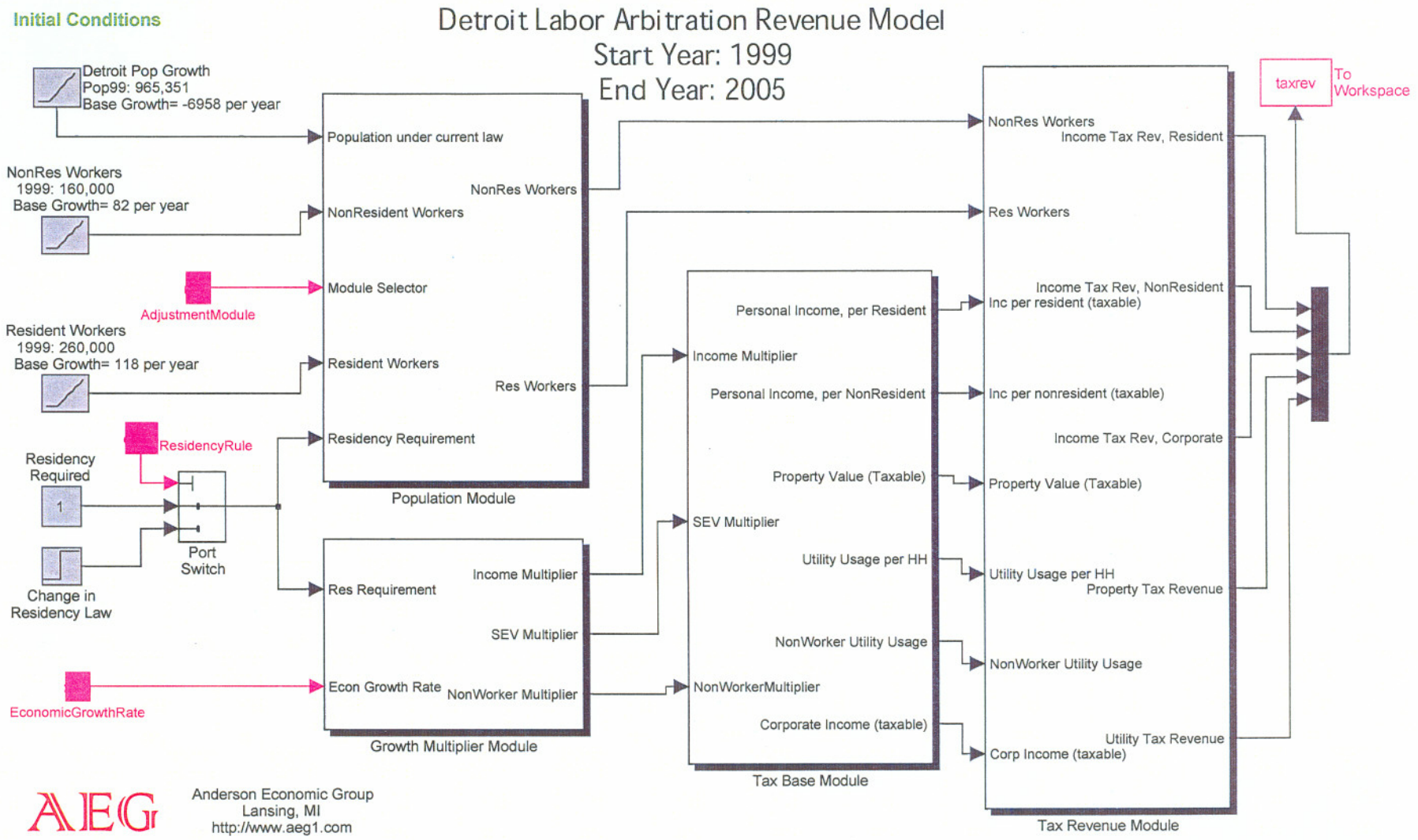


Figure 2: Projected Revenue Changes to the City of Detroit


Initial Conditions
Detroit Labor Arbitration Revenue Model
Start Year: 1999
End Year: 2005
Detroit Pop Growth
Pop99: 965,351
Base Growth= -6958 per year
NonRes Workers
1999: 160,000
Base Growth= 82 per year
AdjustmentModule
Resident Workers
1999: 260,000
Base Growth= 118 per year
ResidencyRule
Residency Required
1
Port Switch
Change in Residency Law
EconomicGrowthRate
Population under current law
NonResident Workers
Module Selector
Resident Workers
Residency Requirement
NonRes Workers
Res Workers
Population Module
Res Requirement
SEV Multiplier
Econ Growth Rate
Income Multiplier
NonWorker Multiplier
Growth Multiplier Module
Personal Income, per Resident
Income Multiplier
Personal Income, per NonResident
Property Value (Taxable)
SEV Multiplier
Utility Usage per HH
NonWorker Utility Usage
NonWorkerMultiplier
Corporate Income (taxable)
Tax Base Module
NonRes Workers
Income Tax Rev, Resident
Res Workers
Income Tax Rev, NonResident
Inc per resident (taxable)
Inc per nonresident (taxable)
Income Tax Rev, Corporate
Property Value (Taxable)
Utility Usage per HH
Property Tax Revenue
NonWorker Utility Usage
Utility Tax Revenue
Corp Income (taxable)
Tax Revenue Module
taxrev
To Workspace
AEG
Anderson Economic Group
Lansing, MI
http://www.aeg1.com

Background: The Residency Requirement Issue

Residency Requirements under Michigan Law

Detroit, like many other cities in Michigan and across the country, imposes a residency requirement on its employees. The enactment of Public Act 212, which went into effect in March of 2000, will prohibit the City of Detroit and other local governments from imposing such requirements or including them in collective bargaining agreements.[18]

The legislature was aware of the likely negative impact of the bill on the City's finances. According to a brief analysis of the bill provided by the Senate Fiscal Agency:[19]

> **FISCAL IMPACT**
> The bill would allow certain employees, as specified in the bill, to live outside of State or local unit boundaries, thereby reducing the income tax revenue collected by the State or cities that levy a city income tax. Depending on the degree to which city income tax collections changed, revenue sharing payments also could minimally change.

The House of Representatives committee also heard testimony from this author about the likely fiscal impact of the bill.[20] It appeared that the majority of the debate concerned the non-financial and non-economic aspects of the bill.[21] These same concerns motivated an initiated constitutional amendment that will appear on the November 2000 ballot.

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[18] Senate Bill 198, which was signed into law by Governor Engler on December 22, 1999, is scheduled to go into effect on March 10, 2000. The bill provides in pertinent part:

> Sec. 2. A public employer shall not require, by collective bargaining agreement or otherwise, that a person reside within a specified geographic area or within a specified distance or travel time from his or her place of employment as a condition of employment or promotion by the public employer. This act does not prohibit a public employer from requiring, by collective bargaining agreement or otherwise, that a person reside within a specified distance from the nearest boundary of a public employer. However, the specified distance shall be 20 miles or another specified distance greater than 20 miles.
>
> Sec. 3. This act applies only to employment contracts entered into, renewed, or renegotiated after the effective date of this act, in accordance with the prohibition against impairment of contracts provided by section 10 of article I of the state constitution of 1963.

[19] "Bill Analysis", 4-20-99; Senate Fiscal Agency, Lansing Michigan. A second analysis, recapping arguments pro and con, again repeated the notion that, especially in "unattractive" cities, that some employees would likely move out a city that no longer imposed a residency requirement.

[20] We are not aware of any other fiscal or economic impact analyses that were available to the legislature, the City, or the general public.

[21] To summarize the major arguments in favor and against the bill, the proponents argued that, in general, no local area should be able to restrict the ability of a worker to live in a certain area. Opponents argued that local voters should be able to determine the employment terms offered by local governments, and that employees have the freedom to choose different jobs if they object. These are important issues, and it is not surprising that many legislators viewed these as more important than the fiscal and economic consequences of the bill on the City of Detroit.

Recent Labor Arbitration Decisions

A previous version of this report was given in two previous labor arbitrations for the City of Detroit and its two police employee unions, the LSA and DPOA. The DPOA arbitrators' decision included a specific finding on the issue:[22]

> And the recent State law barring governmental entities from making residency a condition of employment will add to Detroit's population loss. Without a doubt some City employees will take immediate advantage of their newly won right to relocate. Should, however, a large number of employees do so, it could have a significant adverse impact on City revenues over the short haul.

The Opinion and Award also rejected the conclusion of another expert, who had testified that the City has the "capacity" to grant the increase in benefits and wages requested by the association.[23]

[22] City of Detroit and DPOA, MERC case D98 E-0840, "Opinion and Award," July 21, 2000, page 5.
[23] Opinion and Award, page 6.

Background: The Detroit Regional Economy

The Detroit Area

The metropolitan area surrounding the City of Detroit is the 8th largest in the country, accounting for over 5.2 million people, of which over 4.3 million are in the Detroit Metropolitan area.[24] A network of freeways allows direct access to most parts of the Metropolitan area, as well as surface streets connecting with all areas. Thus, employees of the City of Detroit are able to easily relocate in other urban and suburban areas within commuting distance of their places of work.

The Census Bureau's official estimates for the population of the City of Detroit are contained in Table 3. The City fell below the 1 million mark after the 1990 Census, dropping from the 7th largest city in the nation to the 10th. Its loss of 57,000 residents in the 1990-1998 period placed it as one of the largest population-losing cities in the country, with a rank of 197 out of 218 cities with population over 100,000.

Table 3: Population Estimates for the City of Detroit

Place Name	1998 Population Estimate	1990 Census	Change	Change (%)	Rank 1998	Rank 1990	Rank by % Change
Detroit city, MI	970,196	1,027,974	-57,778	-5.6	10	7	197

Source: US Census Bureau, Report SU-98-1

A Note on the 2000 Census

The census figures for the City of Detroit, like those of every other large area, are estimates subject to error. In particular, urban areas have historically been undercounted. The combination of a population near to 1 million, and the existence of state statutes that establish certain rights for cities over 1 million, has lead to more than the usual amount of scrutiny of Detroit's figures.

However, the exact number of residents is not critical for this analysis. Predicting the effects of a *change* in the number of resident workers paying taxes is the goal of this analysis, and we have quite firm figures for tax revenue and the number of filers. Thus, the effects of a change in the residency requirement on major source tax revenue would be the same, regardless of whether the City has slightly over or slightly under 1 million residents.

[24] Bureau of Census, Current Population Estimates, MA-96-8. The Detroit-Flint-Ann Arbor area is considered a CMSA by the Census; the Detroit PMSA accounted for 4.3 million people in 1996; the Ann Arbor and Flint PMSAs had 530,000 and 436,000 people, respectively.

Methodology

General Methodology

In conducting this evaluation, we interviewed City officials, reviewed economic, demographic, and financial data, and consulted previous research on the topic. Building on past work on the economy and finances of the City of Detroit and the State of Michigan, we then prepared a model tracing the effects of residency of City workers on the population, economy, tax base, and finances of the City.

Using this model and additional information, we project the direct, indirect, and induced effects of a change in the residency requirement. These changes include:

- Changes in the resident population of the City;
- Changes in the number of resident and nonresident workers in the City;
- Changes in the number of municipal workers residing in the City;
- Changes in property values and other tax bases; and
- Changes in property tax and income tax revenue.

The methodology used was conservative, and avoided the common errors of exaggerating benefits and undercounting costs that have undermined other economic impact analyses. A summary of data sources, equations, and model notes are included in this report, along with explanatory narrative and a discussion of the limits of the methodology.

Assessing Economic Change

The starting point of any impact assessment is identifying the change that "impacts" the surrounding economy. In this case, the direct economic change we consider is a change in the requirement that City employees reside in the City. We place the economic effects of the change as beginning in the calendar year 2000. In fact, some of the effects are already starting; the potential for a change in the requirement is undoubtedly already affecting employee plans regarding future location decisions.

Direct, Indirect, and Induced Benefits

Economic Impact analysis is a tool of applied economics, which estimates the total economic effect of a specific change in a local or regional economy.[25] These impacts are generally broken down into three categories.

- Direct effects are those directly attributable to the change. In this case, direct effects would include the effects of employees and their families relocating.

[25] A good, brief summary of techniques are in Glen and Burton Weisbrod, *A Primer on Economic Impact Analysis,* Boston, MA, Economic Development Research; available on the web at http://www.edrgroup.com/B23.html. See also, by the same authors: "*Assessing the Economic Impact of the Transportation Projects: How to Choose the Appropriate Technique for your Project,*" National Research Council, Transportation Research Circular No. 477, October 1997.

- Indirect effects are those that emerge indirectly from the change. This would include reductions in spending in the area by former resident employees, reductions in tax revenue from higher property values, and other effects that occur as a result of the change.

- Induced effects are those that do not occur indirectly or directly from the change, but as a result of behavior induced by the change. Migration outside the City by municipal employees, particularly police and fire employees, would induce some other residents to leave. This reduction in police presence would likely result in an increase in crime and reduction in property values. This, in turn, would result in fewer dollars spent in restaurants and shops, and a further reduction in new income and earnings.

  Induced benefits are the hardest to predict and measure, as they by their nature cannot be directly identified. We have taken a very conservative approach toward induced effects.

Assessing Costs and Benefits

Properly identifying all costs and benefits is the key to proper analysis. In this case, we are careful to identify the likely effects, both cost and benefit, to a change in residency requirements. We have excluded from the analysis sources of revenue that were tied directly to specific fees for specific services, or which primarily financed enterprise funds.

Specific Methodology of this Evaluation

Financial Impact

This analysis goes beyond typical economic impact analyses, and includes an explicit financial impact assessment for the City of Detroit. The City is a financial entity on its own, with particular sources of revenue, expenditure items, and budget constraints.

The economy of the City—more precisely the geographic and demographic area around the City—strongly influences the City as a separate financial entity. In this analysis, we link the economy of the City with its finances.

Revenue Sources Included

The most obvious direct connection between the economy of the City and its finances is through tax revenue. Many types of taxes are levied by the City, and through other state and local governments, which affect its finances. In addition to direct taxes, fee revenue and various state programs that result in direct aid to the City, or indirect aid, also should be considered.

We modeled separately the effect of these demographic and economic changes on the major tax revenue sources for the City. These include:

- Income taxes for residents, nonresidents, and businesses; using the reductions in tax rates for personal income taxes required under the recently passed Public Act;
- Utility user taxes for resident worker households, and other households and businesses; and
- Property taxes, including both real (buildings and property) and personal.

For each major tax revenue source, the residency law change would result in a reduction in revenue.

Other Factors Not Included

The City would also realize other losses, which we did not model. These include:

- Reductions in State Revenue Sharing, especially as the "formula" moves towards a per-capita basis;
- Additional reductions in revenue for service income for enterprise funds, which would likely outstrip reductions in service costs;
- Continued subsidies to enterprise funds, which would have to be carried on a smaller revenue base; and
- Any changes in Federal Aid due to lower population.
- Any reduction in the general economic growth rate, including income growth, in the City.

- Other important factors that are difficult to quantify, such as the loss of the comfort of knowing that police and fire workers are living nearby; the attendant increases in crime; and the disruption in the general improving trend of Detroit.

The exclusion of these other factors makes the results we project quite conservative. Were we to exhaustively model all identifiable factors, the revenue loss we project would certainly be larger.

Past Analyses and Current Budget Comparisons

Comparison with 1998-99 Budget

The projections were also compared with the fiscal year 1998-1999 budget, for major tax revenues.[26] We project changes in revenue for major taxes that support general fund activities, with 1999 estimates that match very closely the budgeted figures for the City in the current fiscal year. A reconciliation of the projections with the current budget is in an appendix entitled *Reconciliation of Forecast with Budget*.

Note that the projections will not match exactly the City budget, even if they are extremely accurate. The projections are based on trend rates of economic, demographic, and tax base growth. The key point in this analysis is the difference that a change in residency would create, assuming that these other assumptions continue to hold.

A NOTE ON THE 1999-2000 BUDGET

The base projections were not revised for the small differences between the 1998-99 and 1999-2000 budget, as the fundamental underpinnings of the analysis remain sound. The focus of the analysis is the *difference* between the City's finances with, and without, a residency requirement. Thus, small changes in the starting point for the analysis would not affect the results of the analysis.

Comparison: Recent Outside Analyses of Current Fiscal Health

BOND RATING AGENCIES: MOODY'S

The City of Detroit, like other municipalities, corporations, and governments, regularly borrows money. Like all borrowers, the City's creditworthiness is evaluated by lenders before they issue a loan.[27] In the municipal bond market, most cities and states are rated for creditworthiness by one or more independent rating agencies. These ratings provide lenders with an independent evaluation of the borrower's ability to repay the debt.

The City of Detroit recently received a "Baa1" rating from Moody's Investor's Service for its ability to support its General Obligation bonds. The City has decided to pay a bond insurance company, Financial Security Assurance, Inc., to insure that the bonds are repaid; the insured bonds were given the higher Aaa rating.

It is important to note that the local government must repay General Obligation bonds, under the State of Michigan Constitution. Such repayment can be accomplished, if necessary, by levying *unlimited* taxes on the citizens of the City.[28] As Moody's notes in its assessment of the City's finances, the City's ability to repay its debt has improved. However, Moody's notes the City continues to have "extremely high debt levels," and that "several obstacles must be overcome in order to stabilize economic conditions over

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[26] This budget was the current budget at the time this analysis was originally performed, and has been maintained for consistency with the analyses provided in the arbitration hearings for the DPOA and LSA contracts, is the same as in the earlier analyses. The discussions below summarize the changes that have occurred in the City since the issuance of the original analysis of the impact of residency.

[27] Whether the loan is in the form of a direct bank loan, line of credit, or the issuance of notes purchased on the municipal bond market is not important in this discussion; all these are forms of lending.

[28] Michigan Constitution, Article IX, section 6, "nonapplication of limit clause."

the long-term."[29]

BOND RATING AGENCIES: STANDARD & POOR'S

Standard & Poor's also rated Detroit bonds recently, giving the General Obligation bonds an "A-" rating.[30] The S&P analysis was quite similar to that of Moody's, citing high debt ratios, improvement in the City's economic base, and the need to address fiscal concerns that remain. The conclude that the outlook remains "stable based on continued renewed economic growth and investment, successful cost containment coupled with promising revenue enhancement efforts despite a high but leveling debt burden."

Such an analysis is again consistent with our view of the city's improved, but still fragile finances.

BOND RATING AGENCIES: FITCH

The Fitch rating agency also rated Detroit's General Obligation bonds as "A-," noting the insurance provided by FSA. Fitch also cited "stringent budget control and a firmer economy" as reasons to rate the insured bonds A-.[31]

CONCLUSION: BOND RATING AGENCY ASSESSMENTS

The Moody's, S&P, and Fitch analyses corroborate our view that the City has made real progress in improving its economic base and financial management, but that the recovery is still somewhat fragile. To maintain Detroit's improving position will require continued economic growth, budget discipline, and continued effort at improving its finances.

AMERICAN ECONOMIC GROUP ANALYSIS

An economic consulting firm headquartered in the Washington DC area recently evaluated the City's budget and the casino industry, in a report prepared for the Detroit City Council.[32] This report, prepared by the "American Economic Group,"[33] was reported as indicating that the City's likely revenue from casinos would exceed previous forecasts.

Indeed, the report does provide an optimistic assessment of the likely revenue from casinos, as well as an optimistic assessment of revenue sharing changes at the state level. The report does not provide a comprehensive look at the City's revenue streams, nor an evaluation of economic cycles, the auto industry, residency laws, or other key factors.[34] The report's key finding is that growth in revenues from casinos will roughly replace losses from the state's actions on revenue sharing.

We believe this report is a reasonable effort to assess the impacts of the casinos industry, along with revenue shareing. However, we find its assessments on both counts to be somewhat optimistic. First, the casino revenue estimates are higher than those

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[29] Moody's report on City of Detroit General Obligation Bonds (unlimited tax) series 2000-A and 1999-A, March 1999.

[30] Standard & Poor's, Public Finance New Issue Review, March 29, 1999. S&P did not detail the rating on the bonds, absent the insurance provided by FSA.

[31] Fitch IBCA, New York, press release, March 26, 1999.

[32] "Detroit Casino Taxes and Fees: Projections in Context of Future Budgets," June 29, 2000, American Economics Group, Washington DC.

[33] While this firm uses the same initials (AEG) as the Michigan-based Anderson Economic Group that prepared this report, there is no connection between the firms.

[34] Indeed, the report explicitly disclaims any ability to forecast economic downturns, and does not incorporate an assumption of any future downturn.

anticipated by the City. While this may, or may not, prove correct, there are many offsetting costs to the casino revenue that are not considered in the report.[35]

Second, the report assumes that revenue sharing is "frozen" at current levels. As noted elsewhere in this report, this is an optimistic assessment, as there is no enforceable requirement for future legislatures to appropriate this amount of revenue.

On broader indications of the City's fiscal health, we share the report's evaluation that the expenditure growth in the City's budget, when compared with revenue growth, is "worrisome," and that measures to restrain spending are necessary to maintain fiscal health. Thus, with the exception of two optimistic assessments, the findings of the report provide additional corroboration to our assessment of the City's fiscal health.

Conclusion: Other Recent Analyses

Our review of the City's economy over the past twelve months is consistent with that reported by independent rating agencies. With the exception of the optimistic assessment of casino revenue and the assumption that an economic downturn need not be anticipated, it is not inconsistent with the major findings of the outside analysis provided to the City council.

All these analyses, properly considered in the context of uncertain casino revenues and the certainty of another economic downturn, indicate that the City's finances are improved, but that fiscal discipline must be maintained in order for the City to continue its economic improvement.

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[35] Such costs include direct government costs, such as police and fire protection, social service costs for gamblers, and other services, as well as the more significant economic costs. Gaming is fundamentally a zero-sum game: money transfers from one party (gamblers) to another party (casinos), and is shared among employees, investors, vendors, and governments. By comparison, private industry is a positive-sum game: customers give money to vendors, who provide them a product that was produced with less cost that the selling price. Thus, the overall transaction improves everyone's welfare.

The fundamental weakness with gaming as an economic development tool is that it captures money locally that would have gone into productive purposes, while it distributes some of that money to investors and vendors outside the local area. Such a strategy can provide benefits to local residents only if, when compared with not allowing gaming, more gamblers come from outside the area. The analysis done by the Washington DC firm does not assess this dynamic.

Comparison: Past Analysis of Residency Effects

The results of this analysis were compared to a previous analysis of the issue, done by economist Michael Thompson in 1985.[36] This analysis, adjusted for the higher price levels, lower tax rates, and larger municipal share of the Detroit economy, produced an estimate of annual direct tax revenue losses to the City of Detroit equivalent to $24 million, once the effects of the migration had occurred. The similar results support the findings of this analysis. A comparison with the previous study is in an appendix entitled *Comparison with Previous Analysis*.

Note that the previous analysis, even when adjusted, should not match exactly the analysis this time. Differences in relative prices and the share of the economy represented by municipal workers are two factors for which we have approximately corrected. There are other factors as well. The current analysis is based on a more sophisticated and comprehensive model, which provides more detail on individual items.

Conservative Assumptions

In general, the assumptions used in this analysis are much more conservative than those used in the Thompson analysis. Two key behavioral parameters bear particular mention:

1. The multiplier used in this analysis is smaller at 1.25, rather than the larger 2.0 figure used by Thompson. This multiplier reflects the fact that direct earnings of City residents are spent more than once in the City, each time generating additional tax revenue for the City.[37] Typical multipliers for local impacts range from 1.4 to 3, and Thompson's use of the 2.0 figure is not unusual.[38] The 1.25 multiplier effect used in this model is quite conservative.[39]
2. The assumed migration of City employees used in this analysis is also smaller. Thompson assumed 34%, based on both survey data and an analysis of Census data on comparable households.[40]

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[36] Michael S. Thompson, "The Economic Impact of the Relaxation of the Residency Requirement of the City of Detroit," paper, no date but believed to be 1985.

[37] For example, assume that 70% of the dollars earned are spent in the local area. The first person spends 70% of a dollar in the City; the recipients of those dollars spend 70% of that portion of the original dollar in the City (70% of .70, or 49 cents), and the next recipient spends 70% of that portion (70% of 49 cents, or 34 cents. Even after just three rounds, in this example, the loss of expenditures was 70 cents + 49 cents + 34 cents, or $1.53. This is equivalent to a multiplier of 1.53. Thus, our use of the 1.25 multiplier is quite conservative.

[38] Thompson cites regional multipliers from 1.41 to 3.07. More recent input-output model results from the US BEA RIMS II models also typically indicate multipliers of 2 or more in other urban areas.

[39] We implement the multiplier by having the migration of City workers induce the migration of other workers, with the City thus losing the positive effects of some of their income. This is again a conservative approach.

[40] The survey data was from a Market Opinion Research poll of City workers from 1974, which estimated 57% of the police and 62% of the fire employees would migrate. As noted by Thompson, this estimate is subject to the usual qualifications about survey data.

The Census data analysis was based on employed individuals that reside in the tri-county area, and who migrated between 1975 and 1980. This indicated net migration, in personal income classes of $25,000 annual earnings and up, between 21% and 33%. Net migration among persons with lower personal income was much lower; persons with personal income below $15,000 had net migration of 9%, and those with

Urban Location Choices: Survey Data from Other Cities

The primary source of information on the location decisions of Detroit residents in this study is the actual decisions of those residents. The actual behavior of people is always the best indicator of the motivating forces behind their desired behavior.[44] We have summarized substantial information above on that behavior, from census data, tax data, employee information, and other sources.

We have some survey data on the location decisions of residents of another Michigan city, Lansing. While there are differences between Lansing and Detroit, the survey data at least provides some corroborating evidence on why current residents of a Michigan city might choose to live, or not live, in the city in the future.

The City of Lansing's population has been relatively steady during the past 10 years. Thus, the actual behavior of Lansing residents has been to remain within their resident city at a higher rate than those in Detroit. This key difference should be kept in mind when viewing the factors Lansing residents indicated were important to their location decisions.

The study found the following viewpoints in Lansing.[45]

- Only a small majority of households randomly surveyed in the study, 56.7%, expect to be living in the City five years from now.
- Residents expressed that living in the City provided key advantages, including good access to work and retail and shopping opportunities.
- A majority of residents surveyed found that their neighborhood's appearance and neighbors to be positive attributes.

Residents also expressed concerns about schools (the number one negative issue for Lansing residents), crime, and taxes.

These survey data, like any survey data, should be interpreted with some caution, particularly as they were not taken from Detroit City employees or residents. However, we note that the concerns expressed by Lansing residents—the quality of schools, access to shopping, crime risk, and tax levels—are factors that would motivate many Detroit

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[44] In the theory of microeconomics, this is sometimes referred to as "revealed preferences," as the actual behavior of people reveals their underlying preferences.

[45] The 1999 City of Lansing Housing Market Study was conducted by Gove Associates and W.E. Upjohn Institute for Employment Research, with assistance from the Kercher Center for Social Research at Western Michigan University. The study was commissioned by the Lansing City Council as an objective analysis of the City as a place to live, work, and shop, and was submitted to the Mayor of Lansing and the Lansing City Council.

residents to consider locating outside their city. Thus, this survey data corroborates our belief that many Detroit residents affected by the residency requirement will consider relocating outside the City.

A: Appendix A: Model Assumptions and Parameters

1. Population Module

Brief Description:

The population module calculates population changes from 1999-2005 based on residency law requirements; i.e., with or without a residency requirement for city employees.

Parameters and Assumptions:

Assumptions	*Value*	*Explanation / Source*
Average HH Size	2.79	June1999 number. Source: SEMCOG Population and Household Estimates for June 1999.
Population Under Current Law (1999)	965,351	June1999 number. Source: SEMCOG Population and Household Estimates for June 1999.
Resident Workers	260,000	Based on 243,742, which was the number of tax returns processed for the 1997 accounting period. These returns may include more than one taxpayer. Growth assumption is recent trend. Source: City of Detroit.
Non-Resident Workers	160,000	Based on 145,644, which was the number of tax returns processed for the 1997 accounting period. These returns may include more than one taxpayer. Growth assumption is recent trend. Source: City of Detroit.
City Employees	18,073	June 1999 number. Source: Salary Analysis Statistics Table, City of Detroit.

Parameters	*Value*	*Explanation / Source*
Direct Migration Factor	23-35 %	This factor drives the migration rate of current city employees over the six-year period. Each of these employees is assumed to belong to a household (for HH size, see above "Average HH Size"). This employee, after migration, is assumed to remain employed by the City of Detroit.
Induced Migration Multiplier	25%	Induced migration as a percentage of direct migration; i.e., for every four city-employed workers that leave, one other worker will leave the city, who after migration, does not remain employed in the city.
Adjustment Modules		Adjustment modules all assume a decreasing percentage of city employees and total migration within 6 years.
Number of working adults per City Employee (i.e., an employee of the city) household	1.0	AEG parameter estimate.

Number of working adults per City worker household	1.0	AEG parameter estimate.

2. Growth Multiplier Module

Brief Description:

This module calculates multiplier values for the model period, 1999-2005, for the three, incorporated economic growth rates: Income, SEV, and "NonWorker" Economic growth

Input Assumptions & Parameters:

Parameters	*Value*	*Explanation / Source*
Economic Growth Rate	5%	AEG parameter estimate of nominal income growth in the Detroit region. "Nominal" growth includes both real growth and inflation. This is a trend estimate for the entire region; actual growth will vary by year and vary among municipalities in the region. Comparative figures: 10-year median household income growth, Detroit PMSA, 4.9% (at last census); annual change in total personal income, Detroit PMSA, 4.4% (1997); Michigan Personal Income Growth, annual rate, 1998 IV quarter, 9.1%.
SEV Growth Rate (Residency required)	4%	AEG parameter estimate based on historical data. Detroit SEV growth rates for 1995-2000 fiscal years was 7.9%.
SEV Growth Rate (Residency not required)	2%	AEG parameter estimate based on historical data. Detroit SEV growth rates during period 1981 to 1994 fiscal years was .82%.
NonWorker Growth Rat	Varyin	This rate is used to project economic variables that are not exclusively driven by current employment by resident or nonresident workers. (The term "nonworker" is useful only in differentiating these variables from those drive *directly* by the number of resident and nonresident workers.) This rate drives corporate income and Nonworker utility usage growth, both of which would be affected indirectly by migration of city workers. By contrast, the municipal income tax revenue is affected directly by such migration. This variable is calculated as the average of the Economic (nominal income) and SEV growth rates.

3. Tax Base Module

Brief Description:

This module applies various growth rate multipliers to the tax base values.

Input Assumptions & Parameters:

Assumptions	*Value*	*Explanation / Source*
Resident Income	$34,526	1998 estimate of average income for a Detroit household; 1999 average earnin $35,384. Source: MapInfoDATA, 1998 and 1999. As a model-simplifying assumption, average earnings of city employees were assumed to equal the average income for a Detroit resident. The actual average income for a city employee as of June 1999 was $33,997. Source: Salary Analysis Statistics Table, City of Detroit. Cross-checked with Detroit Income tax return data to ensure comparability.
NonResident Income	1.5xRes	Assumed to be 1.5x the resident income: $51,789. The estimated average income in 1998 for Wayne County cities surrounding Detroit was $58,300. Source: MapInfoDATA, 1998. Median Household Income estimates for other Wayne County cities in 1999: Allen Park, $55,994; Dearborn and Dearborn Heights, $51,382 and $52,381; Livonia, $71,504; Redford, $51,157; Lincoln Park, $39,974. Of these, Livonia had the largest growth between 1990 and 1999; a gain of 20,000 residents. Source, MapinfoDATA 1999. Cross-checked with Detroit Income tax return data to ensure comparability.
Corporate Income	$1562	(Millions). AEG value derived from City of Detroit Budget Book, FY 1998-99.
Annual Taxed Household Utility Usage	$1500	(Dollars per household). AEG estimate. The Utility Tax is levied on telephone, gas, and electricity services.
City SEV	$7,567	(Millions). Source: City of Detroit Budget Book, FY 1998-99.
Annual NonWorker Taxed Utility Usage	$842	(Millions). AEG value derived from City of Detroit Budget Book, FY 1998-99.

Parameters	*Value*	*Explanation / Source*
Taxable Income Factor (Resident)	90%	% of resident personal income that is taxable. AEG parameter estimate derived from actual budget numbers.
Taxable Income Factor (NonResident)	85%	% of nonresident personal income that is taxable. AEG parameter estimate derived from actual budget numbers
SEV to TV multiplier	87.6%	Taxable values cannot exceed the statewide inflation rate of the prior year. Therefore, the SEV here differs from the TV.

4. Tax Revenue Module

Brief Description:

This module aggregates tax revenue from corporate, resident & nonresident income tax, property taxes, & utility excise taxes.

Parameters & Assumptions:

Assumptions	*Value*	*Explanation / Source*
Resident Income Tax Rate	3 % to 2.4%	Scheduled to decline to 2% at .1% a year, under certain conditions. Due to fiscal year / tax year definition differences, model rate schedule is not equivalent to fiscal year rates.
Non-Resident Income Tax Rate	1.5 % to 1.2%	Scheduled to decline under certain conditions with the Resident Income Tax.
City Homestead Property Tax Rate	33.815	City property taxes are levied on residences and businesses. Assumed to remain constant.
Utility Tax Rate	5 %	
Corporate Income Tax Rate	1.9% to 1.3%	Scheduled to phaseout from 1.9% at .1% a year, under certain conditions. Source: City of Detroit Budget, Fiscal Year ending June 30, 2000.
Corporate Income Tax Collection Rate	93%	AEG parameter estimate.
Resident Income Tax Collection Rate	90 %	AEG parameter estimate.
Non-Resident Income Tax Collection Rate	95 %	AEG parameter estimate.
Homestead Property Tax Collection Rate	81 %	AEG parameter estimate.
Utility Tax Collection Rate	90 %	AEG parameter estimate.

5. Budgeted Tax Revenue, Fiscal Year 1998-1999

Assumptions	*Value*
Net Property Tax	$188,606,656
Net Income Tax	$368,000,000
Utility Tax	$54,750,000

Appendix B: Data Tables: Tax Revenue Reports

The following sets of data tables summarize four different scenarios. Each scenario contains information on the changes in major source tax revenue for the City of Detroit, assuming a change in the residency requirement.

We analyzed a baseline case, plus four different scenarios. The scenarios differed in their assumptions about:

1. The pattern of the migration (much like a decay, amortization, or depreciation schedule, assigning certain shares of the decline to certain years); and
2. The cumulative share of City workers that migrate outside the City. The one baseline and four comparison scenarios were:

- No migration. This is the baseline case, against which other scenarios were compared. It assumes that the City continues to enforce a residency requirement.
- A 35% migration, accomplished in straight-line fashion.
- A 30% migration, accomplished in a 1/t pattern.
- A 25% migration, accomplished in compound-growth pattern. (This scenario is the basis for our summary data.)
- A 23% migration, accomplished in two years.

As discussed above and in Appendix D, these scenarios are much more conservative than those assumed in past analyses. As indicated in detail on the following pages, assuming a different adjustment pattern did not significantly alter the findings over the next few years.

Detroit Model Reporter

1/t Migration: Tax Revenue Differences *(Reductions shown as negative numbers)*

Fiscal Year	Total Change	Income Tax, Res	Income Tax, NonRes	Income Tax, Corp	Property Tax	Utility Tax
1999	$ -	$ -	$ -	$ -	$ -	$ -
2000	$ (5,402,892)	$ (2,019,873)	$ 1,208,718	$ (271,995)	$ (3,778,132)	$ (541,610)
2001	$ (10,679,865)	$ (3,276,011)	$ 1,960,082	$ (529,181)	$ (7,782,952)	$ (1,051,803)
2002	$ (16,090,769)	$ (4,291,674)	$ 2,567,880	$ (769,516)	$ (12,025,039)	$ (1,572,420)
2003	$ (21,679,819)	$ (5,138,373)	$ 3,074,480	$ (990,814)	$ (16,515,424)	$ (2,109,687)

Compound Growth Migration: Tax Revenue Differences *(Reductions shown as negative numbers)*

Fiscal Year	Total Change	Income Tax, Res	Income Tax, NonRes	Income Tax, Corp	Property Tax	Utility Tax
1999	$ -	$ -	$ -	$ -	$ -	$ -
2000	$ (5,965,476)	$ (3,180,473)	$ 1,903,330	$ (271,995)	$ (3,778,132)	$ (638,206)
2001	$ (11,181,386)	$ (4,303,051)	$ 2,574,133	$ (529,181)	$ (7,782,952)	$ (1,140,335)
2002	$ (16,362,604)	$ (4,844,195)	$ 2,897,958	$ (769,516)	$ (12,025,039)	$ (1,621,812)
2003	$ (21,660,815)	$ (5,099,397)	$ 3,050,889	$ (990,814)	$ (16,515,424)	$ (2,106,069)

Quick Drop Migration: Tax Revenue Differences *(Reductions shown as negative numbers)*

Fiscal Year	Total Change	Income Tax, Res	Income Tax, NonRes	Income Tax, Corp	Property Tax	Utility Tax
1999	$ -	$ -	$ -	$ -	$ -	$ -
2000	$ (6,382,827)	$ (4,039,746)	$ 2,416,768	$ (271,995)	$ (3,778,132)	$ (709,722)
2001	$ (11,400,072)	$ (4,750,851)	$ 2,841,848	$ (529,181)	$ (7,782,952)	$ (1,178,936)
2002	$ (16,346,196)	$ (4,810,236)	$ 2,877,371	$ (769,516)	$ (12,025,039)	$ (1,618,777)
2003	$ (21,544,767)	$ (4,863,683)	$ 2,909,342	$ (990,814)	$ (16,515,424)	$ (2,084,187)

Straight-Line Migration: Tax Revenue Differences *(Reductions shown as negative numbers)*

Fiscal Year	Total Change	Income Tax, Res	Income Tax, NonRes	Income Tax, Corp	Property Tax	Utility Tax
1999	$ -	$ -	$ -	$ -	$ -	$ -
2000	$ (5,646,982)	$ (2,524,171)	$ 1,510,898	$ (271,995)	$ (3,778,132)	$ (583,582)
2001	$ (11,204,427)	$ (4,351,094)	$ 2,603,276	$ (529,181)	$ (7,782,952)	$ (1,144,477)
2002	$ (16,843,721)	$ (5,824,415)	$ 3,484,687	$ (769,516)	$ (12,025,039)	$ (1,709,438)
2003	$ (22,534,010)	$ (6,865,394)	$ 4,107,633	$ (990,814)	$ (16,515,424)	$ (2,270,010)

Appendix C: Reconciliation of Forecast with Budget

The following analysis illustrates how the model forecast for major tax revenues matches up closely with the revenues expected for the City budget for the 1998-99 fiscal year. [46]

The projection does not need to match exactly, only to indicate the likely *change* that would occur if the residency requirement could no longer be enforced on City workers.

[46] As discussed in the text, this was the current budget at the time of the original presentation of this analysis, and relatively small changes in the fundamentals of the City's finances have occurred since then.

Reconciliation: Budget & Projections for Current Period

City of Detroit Projected Revenue

Source	*1998-99*
Resident Income Tax	229
NonResident Income Tax	105
Corporate Income Tax	29
Municipal Income Tax	363
Property Tax	189
Utility Tax	56
Total Major Taxes	***608***

City of Detroit Budgeted Revenue

Source	*1998-99*
Resident Income Tax	
NonResident Income Tax	
Corporate Income Tax	
Municipal Income Tax	368
Property Tax	188
Utility Tax	55
Total Major Taxes	***611***

Note: Breakdown of municipal income tax collections in model is based on actual filings; City Budget does not include detail on resident, nonresident, and corporate income tax.

Appendix D: Comparison with Previous Analysis

The following analysis begins with the results found by Thompson in his 1985 analysis of the likely effects of a loss of residency. Thompson's assumptions were less conservative than those used here; in particular, he used a multiplier of 2.0 (rather than the 1.25 here) and expected over 30% of the employees to migrate.

As detailed in the attached worksheets, Thompson's 1985 results, properly corrected for relative prices and the scale of the municipal workforce, are quite similar to ours. This provides an independent verification of the general findings of this report.

Comparable Past Analyses: Thompson (1985)

Number of Likely Migrating City Employees:		6,506
Average Annual Tax Revenue Impact Per Employee:		$ 1,227.33
Total Annual Revenue Impact on City of Detroit, 1985		$ 7,984,998.04
Price Deflator: (Adjusts to 2000 dollars)	(a)	1.47
Direct Revenue Impact in 2000 dollars		$ 11,716,373.53
Multiplier (Thompson p. 20); Generates Indirect Effects		2.0
Direct and Indirect Revenue Impact		**$ 23,432,747.06**
Correction for Lower Income Tax Rates (divide)	(b)	1.15
Corrections, higher municipal workforce proportion (mult	(c)	1.19
Adjusted Total Impact in Current Period		**$ 24,259,271.99**

(a) Deflator to change from 1985 to 2000 dollars

Implicit Price Deflator, 1985 IIIQ	78.76
Implicit Price Deflator, 1998 IIIQ	112.84
estimated 2000 IIIQ at 1.2% per annum	115.6
Price deflator from 1985 to 2000:	1.467298235

(b) Income and corporate tax rates were higher in the 1980's than projected over the next ten years; Municipal workforce was a smaller share of overall workforce;

Resident Income Tax Rate, 1985:	*3.00%*
Resident Income Tax Rate, 2002:	*2.60%*
Ratio	1.15

Lower tax rates means the revenue impact would be smaller during future years.

(c)

Residents income tax returns filed, 1985	*283837*
Residents income tax returns filed, 1995	*237611*
Ratio	1.19

This larger share of municipal workers means the revenue impact of similar migration would be larger during future years.

Comparable Past Analyses: Thompson (1985)

Direct City Tax Revenue Loss Per Family
(Thompson Table 6)

	Police	Fire	Other	weighted average	(a)
Income Tax	$ 604	$ 607	$ 443		
Property Tax	$ 831	$ 834	$ 609		
Utility	$ 76	$ 76	$ 57		
Total	*$ 1,511*	*$ 1,517*	*$ 1,109*	*$ 1,227.33*	

Employees Migrating (Thompson Table 5)

Police		Fire		Other		Total		
number employed	share migrating	number employed	share migrating	number employed	share migrating	number employed	share migrating	*percent*
3,779	2,295	1,347	807	12,357	3,404	17,483	6,506	*37%*

(b)

(a) Weighted by number of employees in each category. Also could be weighted by number migrating. The latter weighted average would be: *$ 1,301.41*

(b) Current Detroit statistics indicate 18,374 employees in 1985.

Appendix E: Graphical Description of Forecast Model

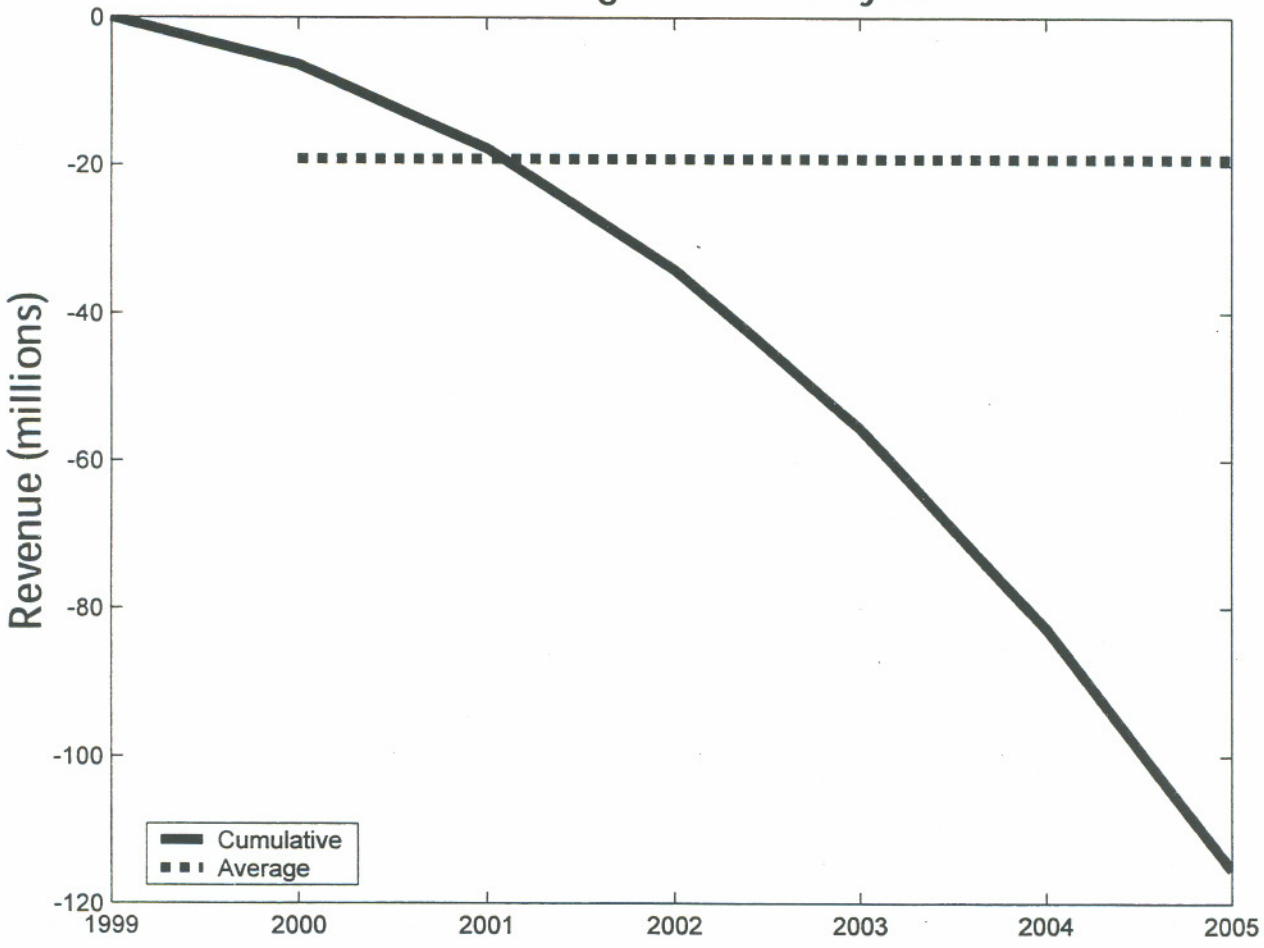
The following figures illustrate graphically the comprehensive model used to forecast economic and demographic changes in the City, and the resulting changes in major tax revenues.

The model simulates the workings of the City's economy as follows:

1. We make assumptions about the number of workers, trend economic growth rate, population, and other variables. These are shown along the left side of the graphical illustration of the model.
2. We make a few parameter adjustments, which introduce a change. In this case, we change the residency rule from residency required (the current, or base case), to residency no longer required.
3. We project population based on these assumptions and parameters. The population module, and the sub-modules beneath it, project population and migration.
4. The growth multiplier module calculates growth multipliers for the City economy, under different scenarios.
5. The tax base module takes the economic growth—calculated earlier—and the population—also calculated earlier—and calculates the tax bases for the major City taxes.
6. The tax revenue module calculates tax revenue to the City, using the tax revenue calculated earlier, assumed tax rates, and other factors.
7. This tax revenue is reported back, in dollars per year, per tax. The difference in the tax revenue stream, between the base case (residency required) and the law-change scenarios, is the direct tax revenue effect on the City.

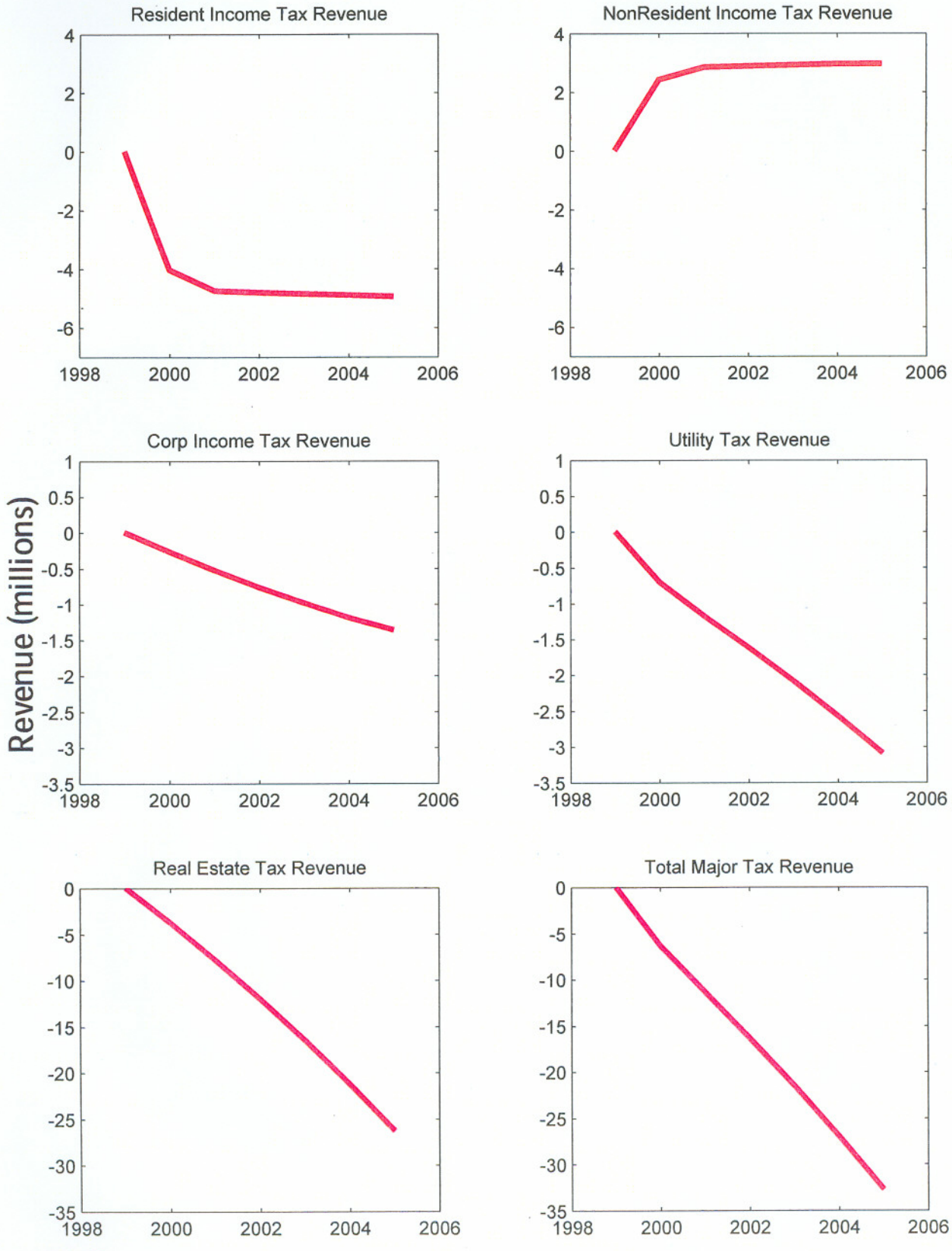
The various assumptions and parameters are discussed in the appendix entitled *Assumptions*.

Detroit: Cumulative & Average Tax Revenue Change Under Change in Residency Law



AEG

Detroit: Major Tax Revenue Change
Under Change in Residency Law



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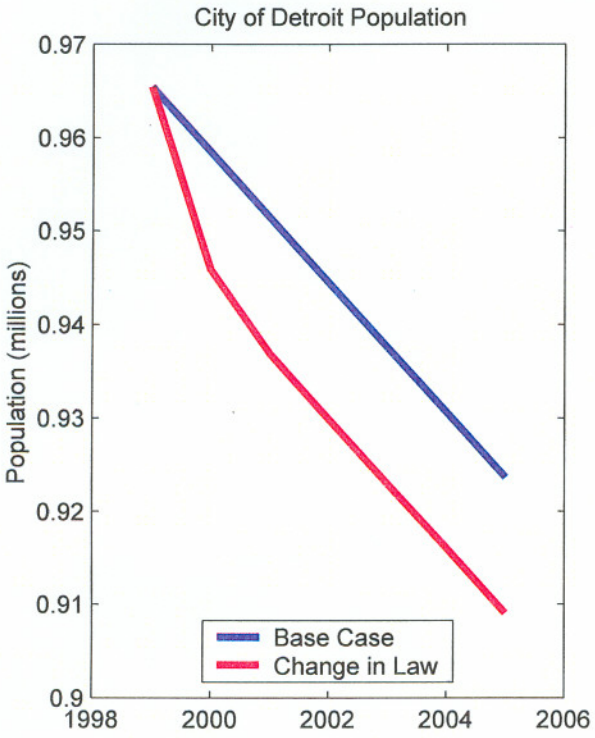
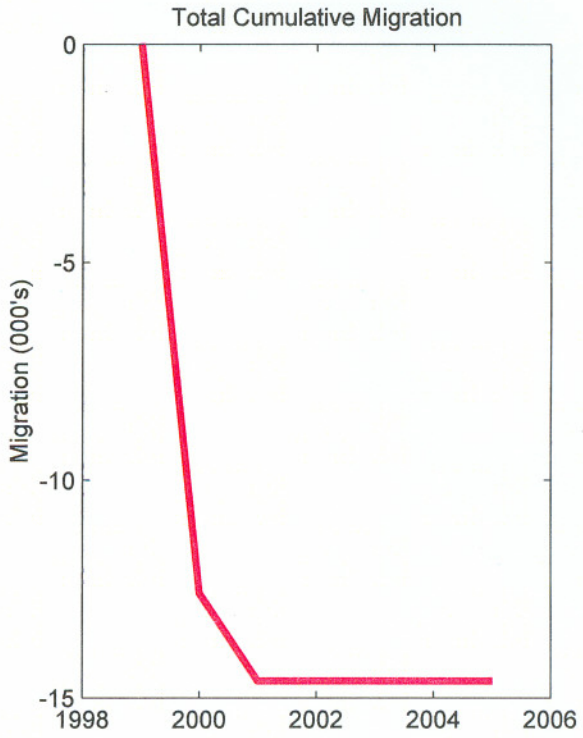
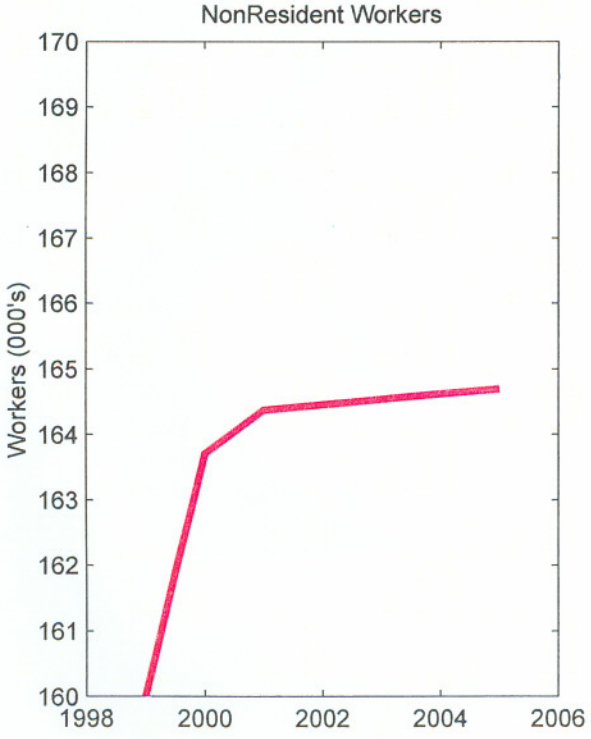
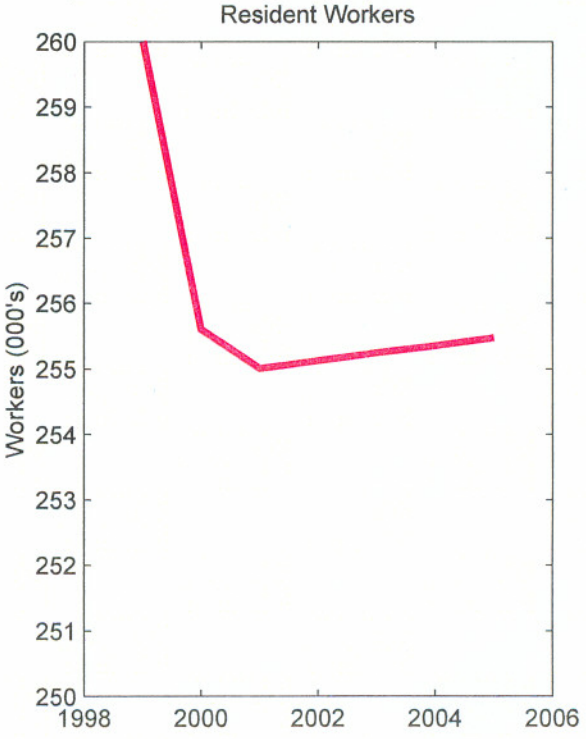
Detroit Demographics
Base Case & Residency Law Change









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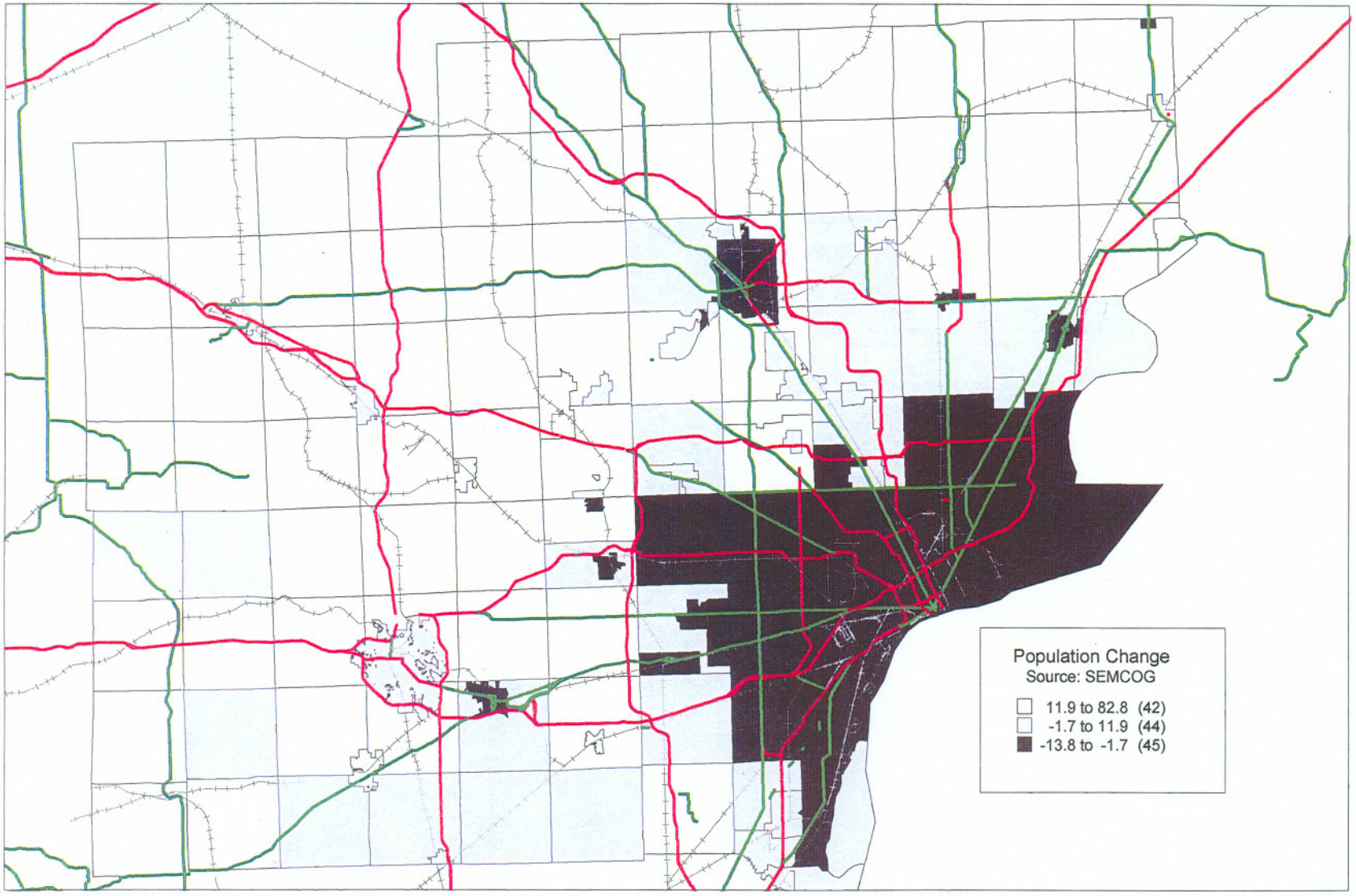
Detroit Area: Population Change by Minor Civil Division, 1990-98



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